

CLAIMS:

1. An image reading apparatus comprising a light source, an input member having an input surface for an object of reading, and a light detecting means composed of a plurality of photoelectric conversion elements for detecting light scattered or reflected at an interface between the object of reading and the input surface,

wherein the input member is made from a transparent base member and is constructed of a rotary member rotating in accordance with an amount of relative movement between the object of reading and the image reading apparatus,

the apparatus further comprising a whole image synthesizing means which detects a rotating amount of a first rotary member by a first light detecting means to detect an amount of relative movement between the object of reading and the image reading apparatus and which obtains a whole image of the object of reading on the basis of a partial image obtained by the first light detecting means and the movement amount.

2. An image reading apparatus according to Claim 1, wherein a light-dark pattern is formed on a surface at one end of the first rotary member, and wherein the first light detecting means detects light emitted from a first light source and transmitted through the light-dark pattern to thereby detect a rotating amount of the first rotary member.

3. An image reading apparatus according to Claim 1 or 2,

characterized in that the first light detecting means is at a position where it receives reflected light generated from the interface between the object of reading and the input surface and determined by Snell's law.

4. An image reading apparatus according to Claim 1 or 2, characterized in that the first light detecting means is at a position where it receives reflected light generated from the interface between the object of reading and the input surface and determined by Snell's law and scattered light generated from the interface between the input surface of the first rotary member and the object of reading.

5. An image reading apparatus according to Claims 1 through 4, characterized in that incident light emitted from the first light source and incident on the input surface has a plurality of different incidence angle components.

6. An image reading apparatus according to any of Claims 1 through 5, characterized in that the image reading apparatus has one of an image formation optical system and a mirror between optical paths of the first rotary member and the first light detecting means.

7. An image reading apparatus according to any of Claims 1 through 6, characterized in that the image reading apparatus has an optical fiber bundle between the optical paths of the first rotary member and the first light detecting means.

8. An image reading apparatus according to any of Claims 1

through 7, characterized in that the first rotary member is formed of a glass base material which is an inorganic base material or a synthetic resin which is an organic base material.

9. An image reading apparatus according to any of Claims 1 through 8, characterized in that the image reading apparatus has, on the input surface of the first rotary member, a dirt prevention layer adapted to prevent dirt from adhering to the surface.

10. An image reading apparatus according to any of Claims 1 through 9, characterized in that the image apparatus has a cleaner adapted to remove dirt adhering to the surface of the first rotary member.

11. An image reading apparatus according to any of Claims 1 through 10, characterized in that the object of reading includes an object of reading having protrusions and recesses like a fingerprint and an object of reading having light and shade like an original.

12. An image reading apparatus according to any of Claims 1 through 11, characterized in that the image reading apparatus has a function by which a one-dimensional position input is effected in accordance with the rotating amount of the first rotary member.

13. An image reading apparatus according to any of Claims 1 through 11, further comprising a second rotary member having a rotation axis different from the rotation axis of the first rotary member and a means for detecting a rotating amount of the second

rotary member, wherein there is provided a function by which a two-dimensional position input is effected in accordance with the rotating amount of the first rotary member and that of the second rotary member.

14. An image reading apparatus according to any of Claims 1 through 11, further comprising a second rotary member which has a rotation axis different from the rotation axis of the first rotary member and on the surface of one end portion of which a light-dark pattern is formed, a second light source, a second light detecting means, and a rotating amount detecting means for detecting a rotating amount of the second rotary member by detecting light emitted from the second light source and transmitted through the light-dark pattern formed on the surface of the second rotary member, wherein there is provided a function by which a two-dimensional position input is effected in accordance with the rotating amount of the first rotary member and that of the second rotary member.

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